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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/500,350

02/09/2005

Sergey Vasilievich Marutian

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22885 7590 08/20/2009  
MCKEE, VOORHEES & SEASE, P.L.C.  
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SUITE 3200  
DES MOINES, IA 50309-2721

EXAMINER

BAREFORD, KATHERINE A

ART UNIT

PAPER NUMBER

1792

NOTIFICATION DATE

DELIVERY MODE

08/20/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patatty@ipmvs.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/500,350	<b>Applicant(s)</b> MARUTIAN ET AL.	
	<b>Examiner</b> Katherine A. Bareford	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on August 10, 2009 has been entered.

The amendment filed with the RCE submission of August 10, 2009 has been received and entered. With the entry of the amendment, claim 4 has been canceled and claims 1-3 and 5 are pending for examination.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-3 and 5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

(A) **Claim 1, line 14**, provides that said aluminum coatings are applied without . . . “or preheating to within austenitic temperatures prior to the plunging step” as is now claimed by the amendment of October 12, 2007 and April 14, 2008. As well, **claim 2, line 14** also makes this requirement, and **claim 5, lines 16-17**, provides that said aluminum coatings are applied without . . . “or preheating to within austenitic temperature prior to the plunging step”. The Examiner has reviewed the disclosure as originally filed, however, there is no support for excluding such preheating. The original disclosure provides “product surface preparing” (as in claim 1, line 2) and then coating with the aluminum melt. This claimed feature is a “negative limitation”, and as discussed in MPEP 2173.05(i):

Any negative limitation or exclusionary proviso must have basis in the original disclosure. If alternative elements are positively recited in the specification, they may be explicitly excluded in the claims. See *In re Johnson*, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977) (“[the] specification, having described the whole, necessarily described the part remaining.”). See also *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983), *aff’d mem.*, 738 F.2d 453 (Fed. Cir. 1984). The mere absence of a positive recitation is not basis for an exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Note that a lack of literal basis in the specification for a negative limitation may not be sufficient to establish a *prima facie* case for lack of descriptive support. *Ex parte Parks*, 30 USPQ2d 1234, 1236 (Bd. Pat. App. & Inter. 1993).

Here, there is simply no discussion one way or the other as to preheating features, and as discussed above, the mere absence of a positive recitation is not a basis for exclusion. The present disclosure provides generally “preparing the surface” with jet abrasive preparing and then goes on to describe specific features of the aluminum alloy coating using a melt. To one of ordinary skill in the art this simply does not amount to it being apparent that commonly known “preparing” steps would NOT be included, such as, as shown by Rallis (US 4655852) and Gierke et al (US 4070210), conventionally known cleaning and preheating steps. In fact, from the shown prior art, it appears that one of ordinary skill in the art would expect preheating of the product to be coated to be conventional. Rather, the description in the disclosure merely indicates that the focus of the claimed invention is on the abrasive treatment and the details of the melt coating with the aluminum alloy. Here, a lack of disclosure about what happens before the focus of the claimed invention would not rise to a teaching that conventional steps necessarily do not happen.

(B) **Claim 2, line 13**, provides that said aluminum coatings are applied without . . . “presence of copper in the melt” as is now claimed by the amendment of April 14, 2008. The Examiner has reviewed the disclosure as originally filed, however, there is no support for excluding copper from the melt. Copper is never mentioned in the disclosure as originally filed, and is certainly never excluded from the alloy. The original disclosure provides that the aluminum alloy melt “is alloyed with zinc, silicon, magnesium, tin . . .” (see page 2 of the specification, and original claim 1) and also that

benefits are provided by “alloying the aluminum melt, comprising zinc, silicon, magnesium and tin” (page 3, second paragraph, of the specification), and also note comprising language at page 4, lines 1-2 of the specification. This open language of “comprising” indicates that the aluminum alloy provided must include zinc, silicon, magnesium and tin as claimed, but that other materials can be included in the alloy. The claimed exclusion of copper is a “negative limitation”, and as discussed in MPEP 2173.05(i):

Any negative limitation or exclusionary proviso must have basis in the original disclosure. If alternative elements are positively recited in the specification, they may be explicitly excluded in the claims. See *In re Johnson*, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977) (“[the] specification, having described the whole, necessarily described the part remaining.”). See also *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983), *aff’d mem.*, 738 F.2d 453 (Fed. Cir. 1984). The mere absence of a positive recitation is not basis for an exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Note that a lack of literal basis in the specification for a negative limitation may not be sufficient to establish a *prima facie* case for lack of descriptive support. *Ex parte Parks*, 30 USPQ2d 1234, 1236 (Bd. Pat. App. & Inter. 1993).

Here, there is simply no discussion one way or the other as to the use of copper, and as discussed above, the mere absence of a positive recitation is not a basis for exclusion.

The present disclosure provides using an aluminum alloy with comprising language that indicates that the alloy can include other than the specifically listed ingredients. To one of ordinary skill in the art this simply does not amount to it being apparent that commonly known further alloying materials, such as copper (see Japan 50-005213),

cannot be used. In fact, from the shown prior art, it appears that one of ordinary skill in the art would expect inclusion of copper to be conventional. While applicant may not have provided support for specific inclusion of copper, applicant certainly did not provide support such that one reading the disclosure would know that copper must specifically be excluded. Applicant has made no showing that one of ordinary skill in the art would, from a reading of the present disclosure, necessarily think that copper was excluded.

(C) **Claim 3, line 10-11**, provides that said plunging in aluminum melts is “for a period of 2 minutes or less” as is now claimed by the amendment of April 14, 2008. The Examiner has reviewed the disclosure as originally filed, however, there is no support this time period of 2 minutes or less. All times of exposure (as described in Tables 1 and 2) to the melt, are 40 seconds or more and 120 seconds (2 minutes) or less. However, the 120 second time period is for a comparative example. The time of exposure for the actual inventive material is precisely 70 seconds in Table 1 and 70 or 80 seconds in Table 2. Thus, there is simply no support for the broad range claimed and the claim contains new matter.

4. Claims 1-3 and 5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the invention.

**Claim 1, last three lines**, “said aluminum coatings further achieving a Mandrel test of 10 mm, whereby said Mandrel test uses a mandrel having minimum diameter of 10 mm”. The specification describes testing “plasticity of the coatings” by “testing the pattern on bending around the cylindrical mandrel, while wending on which the coating on the pattern doesn’t break” (page 3, first paragraph), with description of “Minimum diameter of mandrel, mm” in Table 1, which appears to indicate that “10 mm” refers to “diameter of mandrel”. This simply does not provide an adequate description of how the “Mandrel test” works such that this test can be reproduced, understood or compared, and thus one of ordinary skill in the art would not be able to make and/or use the invention. First, it is unclear what is meant by “pattern” or “wending”. Furthermore, it is unclear to what degree the “coating” is wound around the mandrel, such as, must it go 100%, 10 degrees, 90 degrees, etc. It is also unclear what thickness the substrate is or is not, which would clearly affect how much winding could occur. As well, it is not clear what the mandrel is made from. All of those features would affect the resulting results from using the “Mandrel test”, and none are clarified in the disclosure or claims as filed. Moreover, if this is a known standardized test, such as an ASTM test, it is not clear from the claim or disclosure what this test would be. The disclosure has not referred to a specific test, but rather provided a

general description of a testing with bending **This rejection also applies to the use of “a Mandrel test” in claim 2, claim 3, and claim 5.**

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-3 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 1, line 14**, “or preheating to within austenitic temperatures prior to the plunging step” is confusing as to what is required. The claim does not clarify what is preheated (the product to be coated?, the aluminum alloy?), what austenitic temperatures are referred to (the product?, the aluminum alloy?). As worded, any of these can be referred to. **This rejection also applies the use of preheating as claimed in claim 2 and claim 5.**

**Claim 1, last three lines**, “said aluminum coatings further achieving a Mandrel test of 10 mm, whereby said Mandrel test uses a mandrel having a minimum diameter of 10 mm”. The specification describes testing “plasticity of the coatings” by “testing the pattern on bending around the cylindrical mandrel, while wending on which the coating on the pattern doesn’t break” (page 3, first paragraph), with description of “Minimum diameter of mandrel, mm” in Table 1, which appears to indicate that “10

mm" refers to "diameter of mandrel". This simply does not provide an adequate description of how the "Mandrel test" works such that this test can be reproduced, understood or compared. First, it is unclear what is meant by "pattern" or "wending". Furthermore, it is unclear to what degree the "coating" is wound around the mandrel, such as, must it go 100%, 10 degrees, 90 degrees, etc. It is also unclear what thickness the substrate is or is not, which would clearly affect how much winding could occur. As well, it is not clear what the mandrel is made from. All of those features would affect the resulting results from using the "Mandrel test", and none are clarified in the disclosure or claims as filed. Moreover, if this is a known standardized test, such as an ASTM test, it is not clear from the claim or disclosure what this test would be. **This rejection also applies to the use of "a Mandrel test" in claim 2, claim 3 and claim 5.**

### *Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were

made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rallis (US 4655852) in view of Japan 50-005213 (hereinafter '213).

Rallis teaches a method of applying aluminum alloy coatings on steel products. *Column 2, lines 1-10, 34-50 and 64-68.* Rallis teaches that the product is first prepared for coating. *Column 2, lines 10-40 (heat treating) and column 6, lines 40-60 (heat treating and cleaning before coating).* The cleaning preparation can include grit blasting (which would be using a jet abrasive) the product. *Column 6, lines 40-60.* Rallis then teaches that the prepared product is then plunged into a hot dip aluminum alloy melt bath to coat the product with the aluminum alloy. *Column 6, lines 55-68, for example and column 2, lines 35-50 and 64-68.* The temperature of the aluminum bath can be 1000 to below 1341 degrees F (approximately 538 to 727 degrees C). *Column 2, lines 34-40.* Rallis further teaches that the bath can include aluminum alloyed with zinc, silicon, magnesium and tin materials. *Column 2, line 64 through column 3, line 5 (from the selection from the list of materials provided).* The Examiner understands Rallis to perform the application of the

aluminum coating without flux, as the process of Rallis has no teaching of applying flux (see Examples I and II, for instance, columns 6 and 7).

Claim 2: Rallis teaches alloying additives of copper can be used, but its use is optional. See column 2, line 65 through column 3, line 5.

Rallis teaches all the features of this claim except (1) the precise temperature of the melt bath and the precise amounts of zinc, silicon, magnesium, and tin to be used in the aluminum melt, (2) the mandrel test features (claims 1-2, 5) and (3) the lack of preheating (claims 1-2, 5).

However, '213 teaches that a desirable aluminum alloy composition for improved corrosion resistance includes, by weight, 2-18 % silicon, 2-8 % zinc, 0-2% magnesium and 0.1-1.5% Sn. See the Abstract, and page 2 of the translation. The Examiner notes that while the English language abstract refers to 0.5% copper in the alloy, this is a typographical error, and that '213 teaches 0-5% copper (which therefore means that no copper can be used), (as shown on page 61, 1<sup>st</sup> column in Japanese; page 2 of the translation) where " . . . Si 2-18%, Zn 2-8%, Cu 0-5%, Mg 0-2 % , Sn 0.1-15% . . . " is described, and also notes in the example in the abstract where 0.02 % copper is used which is below 0.5 % copper .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to (1) modify Rallis to optimize the temperature of the melt bath for the specific aluminum alloy used given that Rallis teaches a temperature range of approximately 538 to 727 degrees C, and where the claimed ranges "overlap or lie

inside ranges disclosed by the prior art” a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Furthermore, it would have been obvious to modify Rallis to perform the hot dip coating of the aluminum alloy using an alloy with the components and range taught by ‘213 with an expectation of providing a desirably corrosion resistant plated article, because Rallis teaches a desirable method for providing hot dip coating of an aluminum alloy on a steel product using an aluminum alloy that can contain aluminum, zinc, silicon, magnesium and tin and ‘213 teaches a desirable aluminum alloy containing aluminum, zinc, silicon, magnesium and tin for improved corrosion protection. It would further have been obvious to optimize within the taught range of ‘213 to determine the optimum or workable ranges by routine experimentation. See In re Aller, 200 F.2d 454, 105 USPQ 233 (CCPA 1955). The Examiner understands the ranges given in ‘213 to be in weight percent as the description is in the conventional format for describing weight percent of alloys and as page 2 of the translation indicates that the percentages are in weight percent. (2) As to the resulting coating meeting the claimed mandrel test features, the Examiner notes the confusion as to what is actually required by the Mandrel test as discussed in the 35 USC 112, first and second paragraph rejections above. However, it is the Examiner’s position that the coating method provided by Rallis in view of ‘213 would provide a coating that meets the claimed Mandrel test, because Rallis in view of ‘213 provides a coated article with an aluminum alloy of the percentage requirements of zinc, silicon, magnesium and

tin, which is what appears to be required to meet the Mandrel test as described by applicant in the specification, and the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). The Examiner also notes MPEP 2112, as noting that "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). (3) As to the coating without preheating as claimed, the Examiner notes the confusion as to what is actually required by the preheating as discussed in the 35 USC 112, second paragraph rejection above. However, it is the Examiner's position that it would have been obvious to perform the coating method of Rallis in view of '213 without preheating, to the extent claimed. While Rallis teaches a heating treatment of the product before coating to within the austenitizing temperature of the product (*column 2, lines 15-25*), it would have been obvious to one ordinary skill in the art to modify Rallis in view of '213 to perform the coating process without the preheating process, as it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. *In re Karlson*, 136 USPQ 184. Here, Rallis teaches that the preheating step allows for maintaining high strength carbon and steels after

aluminizing (*column 3, lines 5-20*), and therefore, when high strength is not desired, it would have been obvious to eliminate the element of preheating, which allows saving time and energy. See also MPEP 2144.04, section II.

10. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giersek et al (US 4070210) in view of Rallis (US 4655852) and Japan 50-005213 (hereinafter '213).

Giersek teaches a method of applying aluminum alloy coatings on cast iron and steel products. *Column 2, lines 35-65 and column 5, lines 25-26 and 44-45*. Giersek teaches that the product is first prepared for coating. *Column 5, lines 25-35 (preheating and cleaning before coating)*. Giersek then teaches that the prepared product is then plunged into a hot dip aluminum alloy melt bath to coat the product with the aluminum alloy. *Column 5, lines 25-35, for example and column 2, lines 35-65*. The temperature of the bath can be 550-950 degrees C, such as 550 to 650 degrees C. *Column 2, lines 50-60 and column 5, lines 25-30*. Giersek further teaches that the bath can include aluminum alloyed with metal such as zinc, silicon, magnesium and tin materials. *Column 2, lines 50-55*. Giersek provides that the aluminum coatings can be applied without flux when desired. *Note Example VI, column 5, lines 25-40 where the coating is applied without any flux treatment as compared to Example VII, column 45-50, where a flux treatment is applied.*

Claim 1, 2, 5: as to preheating the product, Gierrek does not teach preheating to austenitic temperatures, as Gierrek teaches preheating to 100 to 400 degrees C at most.

*Column 2, lines 55-65 and see example VI, column 5, lines 25-30.*

Claim 2: Gierrek teaches that copper can be an alloy material with aluminum alloy, but that its use is optional. *Column 2, lines 50-53.*

Claim 3: Gierrek discloses that the time in the melt can be 1-10 minutes. *Column 3, lines 40-45.* It can also be 30 seconds to 10 minutes. *Column 4, lines 5-10.* Therefore, the time in the melt can be less than 2 minutes, such as 1 minute or 30 seconds, since In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

Gierrek teaches all the features of this claim except (1) the pretreatment with jet abrasive, (2) precise temperature of the melt bath and the precise amounts of zinc, silicon, magnesium, and tin to be used in the aluminum melt and (3) the mandrel test features (claims 1-3 and 5).

Rallis teaches a method of applying aluminum alloy coatings on steel products. *Column 2, lines 1-10, 34-50 and 64-68.* Rallis teaches that the product is first prepared for coating. *Column 2, lines 10-40 (heat treating) and column 6, lines 40-60 (heat treating and cleaning before coating).* The cleaning preparation can include grit blasting (which would be a jet abrasive) the product. *Column 6, lines 40-60.* Rallis then teaches that the prepared product is then plunged into a hot dip aluminum alloy melt bath to coat the product

with the aluminum alloy. *Column 6, lines 55-68, for example and column 2, lines 35-50 and 64-68.* The temperature of the bath can be 1000 to below 1341 degrees F (approximately 538 to 727 degrees C). *Column 2, lines 34-40.* Rallis further teaches that the bath can include aluminum alloyed with zinc, silicon, magnesium and tin materials. *Column 2, line 64 through column 3, line 5 (from a selection of the materials given).*

Moreover, '213 teaches that a desirable aluminum alloy composition for improved corrosion resistance includes, by weight, 2-18 % silicon, 2-8 % zinc, 0-2% magnesium and 0.1-1.5% Sn. See the Abstract, and page 2 of the translation. The Examiner notes that while the English language abstract refers to 0.5% copper in the alloy, this is a typographical error, and that '213 teaches 0-5% copper (which therefore means that no copper can be used), (as shown on page 61, 1<sup>st</sup> column in Japanese; page 2 of the translation) where " . . . Si 2-18%, Zn 2-8%, Cu 0-5%, Mg 0-2 % , Sn 0.1-15% . . . " is described, and also notes in the example in the abstract where 0.02 % copper is used which is below 0.5 % copper .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gieriek to (1) provide that the "cleaning" process before coating includes grit blasting (jet abrasive treatment) as suggested by Rallis with an expectation of desirable cleaning results, because Gieriek teaches to provide a "cleaning" process before aluminum alloy melt coating and Rallis teaches that it is well known for "cleaning" to include grit blasting when preparing a surface for aluminum alloy melt coating. (2) It would further have been obvious to modify Gieriek in view of Rallis to

optimize the temperature of the melt bath for the specific aluminum alloy used given that Gierek teaches a temperature range of approximately 550 to 950 degrees C, including 650 degrees C, and where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Furthermore, it would have been obvious to modify Gierek in view of Rallis to perform the hot dip coating of the aluminum alloy using an alloy with the components and range taught by ‘213 with an expectation of providing a desirably corrosion resistant plated article, because Gierek teaches a desirable method for providing hot dip coating of an aluminum alloy on an iron or steel product using an aluminum alloy that can contain aluminum and alloying metal such as zinc, silicon, magnesium and tin and Rallis also teaches to providing hot dip coating of an aluminum alloy on a steel product using an aluminum alloy that can contain aluminum and zinc, silicon, magnesium and tin, and that such alloy materials can be added in combination, and ‘213 teaches a desirable aluminum alloy containing aluminum, zinc, silicon, magnesium and tin for improved corrosion protection. It would further have been obvious to optimize within the taught range of ‘213 to determine the optimum or workable ranges by routine experimentation. See In re Aller, 200 F.2d 454, 105 USPQ 233 (CCPA 1955). The Examiner understands the ranges given in ‘213 to be in weight percent as the description is in the conventional format for describing weight percent of alloys and as page 2 of the translation indicates that the percentages are in weight

percent. (3) As to the resulting coating meeting the claimed mandrel test features, the Examiner notes the confusion as to what is actually required by the Mandrel test as discussed in the 35 USC 112, first and second paragraph rejections above. However, it is the Examiner's position that the coating method provided by Gieriek in view of Rallis and '213 would provide a coating that meets the claimed Mandrel test, because Gieriek in view of Rallis and '213 provides a coated article with an aluminum alloy of the percentage requirements of zinc, silicon, magnesium and tin, which is what appears to be required to meet the Mandrel test as described by applicant in the specification, and the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). The Examiner also notes MPEP 2112, as noting that "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999).

### ***Response to Arguments***

11. Applicant's arguments filed August 10, 2009 have been fully considered but they are not persuasive.

(A) The 35 USC 112, first paragraph, written description rejection

At pages 5-6 of the amendment of August 10, 2009, applicant provides a statement of case layer as to written description requirements.

At pages 6-8 of the amendment, applicant argues as to the rejection that there is no support for excluding the preheating step (paragraph 3(A) in the rejection above), that the Examiner's position that the specification is silent with regard to this negative limitation and therefore concludes that the limitation is not supported by the specification. However, according to applicant this is incorrect as to the requirements of 35 USC 112, which does not require a description of everything outside or excluded by the invention, and the specification describes the whole invention, with no requirement to describe anything beyond the invention. Furthermore, while the Examiner asserts that preheating is conventional, but if preheating was required in applicant's invention then 35 USC 112(1) requires that preheating be described; and the Examiner's own description of the prior art supports the conclusion that since one skilled in the art would assume there is no preheating, since there is no description of preheating. Applicant also argues that when the Examiner cited Rallis as to not using flux, this is based on Rallis having no teaching of applying flux and, here the Examiner uses the silence in Rallis regarding the application of flux as a teaching of not using flux, and it is improper for the Examiner to assert the contrary with regard to applicant's specification. Applicant also cites Ex Parte Parks as indicating that if there was preheating used, it seems that the specification would cry out for preheating if it was a step in applicant's process. Furthermore, applicant argues, the citation in the published

specification, paragraph 4 would indicate that it solves the problem in the art of applying aluminum melt at high temperatures by decreasing the temperature of the aluminum melts, which cannot occur with a preheating step.

The Examiner has reviewed these arguments, however, the rejection is maintained. Applicant is trying to exclude a specific step -- preheating to a specific (austenitic) temperature. The disclosure as filed has no indication that such a step is part of the invention. The mere fact that a step was not previously (positively) described in the specification does not allow one to exclude the step as a negative limitation as discussed in the rejection above. This negative limitation means that it is a required part of the process that the step be excluded, so according to applicant's discussion of being required to describe the invention would mean that this specific exclusion of a step should be described in the disclosure as filed. While applicant discusses Rallis, the rejection is based on what is required by the present application. As to Ex parte Parks, the present disclosure provides generally "preparing the surface" with jet abrasive preparing and then goes on to describe specific features of the aluminum alloy coating using a melt. To one of ordinary skill in the art this simply does not amount to it being apparent that commonly known "preparing" steps would NOT be included, such as, as shown by Rallis and Gieriek, conventionally known cleaning and preheating steps for the product to be coated. In fact, from the shown prior art, it appears that one of ordinary skill in the art would expect preheating of the product to be coated to be conventional. Rather, the description in the disclosure

merely indicates that the focus of the claimed invention is on the abrasive treatment and the details of the melt coating with the aluminum alloy. Here, a lack of disclosure about what happens before the focus of the claimed invention would not rise to a teaching that conventional steps necessarily do not happen. This differs from Parks description of a step that would cry out for a teaching of a material that would be used if it was, in fact, used. As to the discussion of paragraph 4 of the published specification, it provides no discussion of "preheating" the product to be coated before coating. Rather they discuss what temperature the aluminum melt should be heated to. As noted in the 35 USC 112, second paragraph rejection above, it is unclear from a reading of the wording of the claims what is required not to be preheated – the product to be coated? the aluminum alloy?, etc; and what austenitic temperatures are referred to – the product to be coated?, the aluminum alloy?. From the possible preheating requirements, the Examiner has interpreted the claim as requiring that the product to be coated not be preheated to within the austenitic temperature of the product to be coated (which as noted by Rallis, column 2, lines 15-21, would be above 1341 degrees F, 727 degrees C for the steel). There is no reason why temperatures of aluminum melt used would prevent preheating of the substrate.

At pages 8-10 of the amendment, applicant argues that as to the lack of copper in the melt (paragraph 3(B) in the rejection above), that for all the reasons set forth above as to the limitation "without preheating" the Examiner's rejection of the "without copper" limitation should be withdrawn. Applicant argues that the specification clearly

describes the alloy as containing an aluminum base, and zinc, silicon, magnesium and tin and nowhere does the specification teach or suggest that other components should be added. Applicant argues that they could not add a claim limitation that the alloy includes copper, and thus the negative limitation of "without copper" cannot also be new matter. While the Examiner's rationale is based upon "comprising" language, if this is followed, applicant argues that they would have to list everything that must be excluded from the alloy, which is not required by 35 USC 112(1). As to what is known in the prior art, applicant argues that they do not have to discuss or distinguish prior art, and the concept that the process does not involve introduction of copper into the melt is reasonably conveyed from the specification as originally filed.

The Examiner has reviewed these arguments, however, the rejection is maintained. As discussed in the rejection above, the lack of a positive recitation of copper is not a basis for exclusion given the comprising language of the original specification (that indicates that the alloy can include other than the specifically listed ingredients; see page 3, second paragraph and page 4, lines 1-2 of the specification) and the known conventional use of copper as an alloying material in aluminum alloys with zinc, silicon, magnesium and tin, as shown by the evidentiary support Japan 50-005213. Applicant has made no showing that one of ordinary skill in the art would, from a reading of the present disclosure, necessarily think that copper was excluded. In fact, from the shown prior art, it appears that one of ordinary skill in the art would expect inclusion of copper to be conventional. Applicant argues that applicant does not have

to list everything that must be excluded from the alloy. However, the mere fact that a component was not previously (positively) described in the specification does not allow one to exclude the step as a negative limitation as discussed in the rejection in the citation of MPEP 2173.05(i) above. This negative limitation means that it is a required part of the process that the step be excluded, so according to applicant's discussion of being required to describe the invention would mean that this specific exclusion of a step should be described in the disclosure as filed.

At page 10 of the amendment, applicant argues that while the Examiner asserts that the plunge time of two minutes or less (paragraph 3(C) of the rejection above) is not supported by the specification, since the specification has examples where the plunge time is 40-120 seconds, and the Examiner acknowledges that Tables 1 and 2 support the plunge times for exposure to the melt, and according to applicant, 120 seconds is the highest amount of time, and based on these tables one of ordinary skill in the art would understand the preferred plunge time would not exceed 120 seconds.

The Examiner has reviewed these arguments, however, the rejection is maintained. The only support for plunging time (time of exposure to the melt) is provided in Table 1 and 2 of the specification. However, these tables does not support the plunging time claimed. Of all times of exposure (as described in Tables 1 and 2) to a melt, 40 seconds is the least amount of time (and thus no indication of 0-up to 40 seconds is provided); and 120 seconds is the most amount of time. Therefore, at the very least the range of "2 minutes or less" which would include for 1 second or 10

seconds, for example, is not supported. Moreover, the 120 second and 40 second period of exposure are for comparative examples. The time of exposure given in the specification for the actual invention (coat with aluminum alloy with zinc, silicon, magnesium and tin at 660-680 degrees C) is precisely 70 seconds in Table 1 and 70 or 80 seconds in Table 2. There is no indication that the exposure time can be less or more for the claimed invention. Thus, there is simply no support for the broad range of 120 seconds or less claimed from the disclosure as filed. Applicant refers to temperatures of 350 degrees C, and 360-380 degrees C (apparently meaning 650 degrees C and 660-680 degrees C, as actually described). While 650 degrees C is fairly close in temperature to the claimed 660-680 degrees C claimed temperature range, it is still outside of the claimed range and thus a comparative example.

(B) The 35 USC 112, first paragraph, Enablement rejection

At pages 10-11 of the amendment, applicant first provides case law as to enablement.

At pages 11-12 of the amendment, applicant argues that a simple Google search demonstrates that the Mandrel test is a commonly known test in the industry, and that the standard for enablement does not require applicant to explicitly describe terms that are well known in the art. Since it is well known in the art, applicant argues that it would not require an undue amount of experimentation to make and/or use the test. Applicant further argues that the Mandrel test is a well known standardized test, ASTM

D522, and equipment is commercially available to perform a Mandrel test under this standard. Applicant argues that as the Mandrel test is widely known and used in the art, those of ordinary skill in the art would have been provided a reasonable amount of guidance to make and use the claimed invention.

The Examiner has reviewed these arguments, however, the rejection is maintained. The Examiner first notes that applicant, in the disclosure, has not referred to a specific test, but rather provided a general description of a testing with bending (page 3, first paragraph "Plasticity of the coatings was estimated by testing the pattern on bending around the cylindrical mandrel, while wending on which the coating on the pattern doesn't break", with Tables 1 and 2 providing a heading "Minimum diameter of mandrel, mm", which appears to indicate that 10 mm refers to mandrel diameter). Therefore, while tests may be known to be performed with mandrels and a specific ASTM test may be known, there is no indication in the disclosure as filed what specific test is used, including whether or not the described ASTM test is used. The Examiner has clearly met the initial burden of establishing a reasonable basis to question enablement, by noting the various issues as to why it is unclear what is required by this testing process, so that it can be reproduced, understood or compared, including the questions as to what is meant by "pattern" or "wending", what degree of winding is required, what the thickness of the substrate is, what the mandrel is made from, for example. Applicant's citation that "Mandrel test" is a commonly known test (applicant has provided a citation to "composite.about.com", that simply defines a "mandrel test"

as "the test for determining the flexibility and adhesion of surface coatings by bending coated metal panels about mandrels" (see the supplemental Appeal Brief of February 2, 2009)) , in no way provides a showing through convincing argument and/or evidence that what is described by applicant's disclosure is the same "Mandrel test" and, further, what one of ordinary skill in the art would understand the features of a "Mandrel test" to require such that the issues raised by the Examiner as to what is meant by "pattern" or "wending", what degree of winding is required, what the thickness of the substrate is, what the mandrel is made from, for example, are clarified. Since the "Mandrel test" information provided by appellant does not allow for reproducing, understanding or comparing the specific test used, it would clearly require an undue amount of experimentation to make and/or use the Mandrel test of the claims.

(C) The 35 USC 112, second paragraph rejections

At pages 12-13 of the amendment, applicant argues that as to the preheating confusion, that since austenitic temperature relate to iron or steel, and not to aluminum, it would be clear that the limitation that the process be performed without preheating to the austenitic temperature refers to the steel or cast iron product being coating and not to the alloy melt.

The Examiner has reviewed these arguments, however, the rejection is maintained. Applicant's exhibit A refers to the existence of austenite, not to the definition of austenitic temperature. Furthermore, even if this temperature referred

specifically to a temperature for related to achieving austenite, for example, the product to be coated or the aluminum alloy could be heated to these temperatures.

At page 13 of the amendment, applicant argues that as to the indefiniteness with regard to the Mandrel test, that since the Mandrel test is a standard ASTM test, one skilled in the art would know how to do the test.

The Examiner has reviewed these arguments, however, the Examiner's rejection is maintained. As discussed in the 35 USC 112, first paragraph rejection as to enablement above, applicant has not provided appropriate convincing arguments and/or evidence that the Mandrel test as described in the disclosure would be understood by those of ordinary skill in the art to refer to a specific known Mandrel test. Since one does not know what the test is, the confusion, as discussed above, remains as to what is required.

(D) The 35 USC 103(a) rejection using Rallis in view of Japan '213

At pages 13-14 of the amendment, applicant first provides a statement of case law as to obviousness.

At pages 14-16 of the amendment, applicant argues that the use of '213 for the alloy composition is improper as the zinc component in the alloy in '213 is 2-8%, where as claims 1, 2 and 5 require that the zinc amount be 7-10%, and thus the '213 zinc range is at best 20% short of applicant's zinc quantity and applicant's zinc is not encompassed by the zinc of '213 and applicant's zinc does not fall within the zinc range of '213. As to

meeting the Mandrel test, applicant argues that since the claimed zinc range is not met, the premise that the coated Rallis product would meet the Mandrel test is defective.

Applicant argues that the Examiner's position that it would be obvious to perform the coating method of Rallis in view of '213 without preheating is wrong, with the cited case law to *In re Karston* indicating that omission of an element involves only routine skill where the remaining elements perform the same functions, and there is no suggestion that the Rallis coating process is the same with and without preheating.

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the amount of zinc used in '231 vs. the amount of zinc claimed, the Examiner notes that a range of 2-8% overlaps 7-10% in the area of 7-8%. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, if the Rallis alloy is modified in accordance with the teaching of '213, usage of zinc within the presently claimed amount is suggested. It is not required that the exact range be provided, merely a point within that range. As to meeting the Mandrel test, since the zinc usage within the claimed amount would be provided, the premise that the product of Rallis in view of '213 meets the claimed Mandrel test is not defective. As to the arguments with regard to performing the coating method without preheating, the Examiner disagrees with applicant's position. The Examiner has not asserted, without support, that it would be obvious to perform the coating method without preheating, but rather has cited the case law to *In re*

Karlson. Furthermore, the Examiner notes that the remaining elements in Rallis would perform the same functions (as to coating application), the function of preheating and the further strengthening are what is excluded. Furthermore, the Examiner has provided the reasoning as to why the function of preheating would be excluded.

(E) The 35 USC 103(a) rejection using Gieriek in view of Rallis and '213

At pages 16-18 of the amendment, applicant argues that Gieriek is limited to a single alloying metal, with no suggestion to modify Gieriek to alloy an aluminum melt with these four claimed metals, and again notes that Rallis in view of '213 do not teach the process as claimed. Furthermore, according to applicant, Gieriek also teaches preheating to within the austenitizing temperature range, with upper bounds 270 degrees C higher than the upper temperatures allowed by the present invention. As to the Examiner's arguments as to optimizing temperature, applicant argues that it is only when it is reasonably expected that an improvement will arise in that range, and it is not clear what the Examiner thinks would be optimized by lowering the temperatures described by Gieriek to below the austenitizing range. Applicant further argues that the Examiner's assertion that '213 teaches an aluminum alloy without copper is in error. Furthermore, as to the combination of the references, applicant argues that '213 teaches zinc in the range of 2-8%, not the 7-10% of the claims. As to meeting the Mandrel test, applicant argues that since the claimed zinc range is not met, the premise that the coated product would meet the Mandrel test is defective.

The Examiner has reviewed applicant's arguments, however, the rejection is maintained. Gierek does disclose that each of the four materials (zinc, silicon, magnesium and tin) can be alloyed with the aluminum (column 2, lines 50-53). Although Gierek does not explicitly disclose that that alloys combined of aluminum and more than one of these materials can be used, the Examiner has further provided Rallis and '213 as to the suggestion and coventionality of using all four of these materials in combination when providing aluminum alloys. One of ordinary skill in the art would expect desirable results from following the process of Gierek, when using the alloy of a combination of the four materials with aluminum suggested by Rallis and '213, because as noted in the rejection above, Rallis shows alloys of aluminum for aluminum alloy melt plating can include mixtures of the materials, and '213 shows a desirable aluminum alloy has all four claimed alloy materials, and in Gierek each of the individual materials can be used, indicating that no component described would be incapable of being used or unacceptable for being used in the described application process of Gierek. As to the argument that Rallis in view of Japan '213 does not teach the preparation of aluminum alloy on cast iron and steel products without preheating prior to the plunging step to a temperature within the austenitizing temperature range, and Gierek also teaching preheating within this temperature range with upper bounds 270 degrees C higher than the upper temperature allowed by the present invention and it is not clear what result the Examiner thinks would be "optimized" by substantially lowering the temperature disclosed by Gierek to below austenitiziing range to arrive at

applicant's claimed preheating range, the Examiner notes that in the rejection using Gierrek in view of Rallis and '213, the primary reference to Gierrek is provided as to the claimed without "preheating to within austenitic temperature prior to the plunging step" (as in claim 1). The Examiner has noted in the 35 USC 112, second paragraph rejection that it is unclear from this wording as to what is required not to be preheated – the product to be coated? the aluminum alloy?, etc; and what austenitic temperatures are referred to – the product to be coated?, the aluminum alloy?. From the possible preheating requirements, the Examiner has interpreted the claim as requiring that the product to be coated not be preheated to within the austenitic temperature of the product (which as noted by Rallis, column 2, lines 15-21, would be above 1341 degrees F, 727 degrees C for the steel). As noted in the rejection above, Gierrek teaches that the product to be coated is preheated at 100 to 400 degrees C (column 2, lines 58-51), well below the austenitic temperature. As to preheating with upper bounds 270 degrees C higher than the upper temperature of the present invention, appellant appears to be referring to the broad range of temperature of the aluminum alloy bath (column 3, lines 53-57). This is not preheating of the substrate product to be coated, but rather the temperature of the aluminum alloy bath (melt) at the time of immersion, which overlaps with appellant's claimed (660-680 degrees C) temperature of the bath. The optimizing of the range is to optimize the temperature of the bath at the time of immersion, not the preheating temperature for the product to be coated. As noted before, applicant's language in the claims leaves multiple interpretations of what is to

be preheated and the Examiner has provided a reference with a preheating condition that reads on the claimed preheating process. Furthermore, even if the aluminum alloy bath is what is to be "preheated", it would still have been obvious to optimize to within the claimed range of applicant of 660-680 degrees C, since this is the temperature desired for plating, and thus the temperature the bath would be heated to; and this temperature is below the austenitic temperature. As to optimizing the temperature of the bath to the claimed 660-680 degrees C, Gierrek provides an aluminum alloy bath temperature range of approximately 550 to 950 degrees C, including 650 degrees C, and where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). It would be reasonably be expected that the desirable improvement would occur by heating in the range of 550-950 degrees C since this is the desired range taught by Gierrek and 660-680 degrees C is within that range. One is not randomly lowering the temperature from austenitic, but rather providing the suggested optimization from the entire range of Gierrek, which even has an example (at 550-650 degrees C, column 5, lines 29-31) of temperatures below the austenitic range. As to the arguments as to the lack of copper in the claimed invention, where applicant argues that the Examiner has asserted that the statement in '213 that a desirable alloy includes 0.5 % copper is a typographical error in the English Abstract, but according to applicant it is more likely that the 0-5% copper is the typographical error, the Examiner disagrees. The teaching within the Japanese

patent document of '213 (page 61, 1st column of original, page 2 of translation) is the controlling teaching of what '213 itself provides, and thus the range of 0-5 % controls. The rejection uses '213 itself. The provision of 0.5% in the abstract is in a separate document later provided by Derwent. Furthermore, the Examiner has also clearly provided why the abstract provision of 0.5% by Derwent is clearly a typographical error, because within that same Derwent abstract is a provision of Cu at 0.02% is made, which contradicts 0.5%, but is within the range of 0-5% (in a specimen corresponding to example 1 of '213, at the Table at page 62, first column of the original, page 7 of the translation). As to the arguments that '213 does not teach the claimed range of zinc, the Examiner disagrees for the reasons discussed in section (D) above. The Mandrel test will be met, because all of the components of the alloy will be present.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Katherine A. Bareford/  
Primary Examiner, Art Unit 1792